Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AX030046WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No PCT/ES2003/000392	International filing date (*day/month/year*) 25 July 2003 (25 07 2003)	Priority date (*day/month/year*) 14 November 2002 (14.11 2002)
International Patent Classification (IPC) or national classification and IPC G01J 3/44		
Applicant FIBERCOM S.L		

1 This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36

2 This REPORT consists of a total of _____ sheets, including this cover sheet

☐ This report is also accompanied by ANNEXES, i.e , sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70 16 and Section 607 of the Administrative Instructions under the PCT)

These annexes consist of a total of _____ sheets

3 This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 27 April 2004 (27 04 2004)	Date of completion of this report 11 June 2004 (11 06.2004)
Name and mailing address of the IPEA/ES Facsimile No	Authorized officer Telephone No

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No
PCT/ES2003/000392

I. Basis of the report

1 With regard to the elements of the international application:*

☒ the international application as originally filed

☒ the description:

pages 1 a 12, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages 13 a 16, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the drawings:

pages 1 & 2, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2 With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23 1(b))

☐ the language of publication of the international application (under Rule 48 3(b))

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55 2 and/or 55 3)

3 With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form

☐ filed together with the international application in computer readable form

☐ furnished subsequently to this Authority in written form

☐ furnished subsequently to this Authority in computer readable form

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4 ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos _____

☐ the drawings, sheets/fig _____

5 ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70 2(c)) **

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70 16 and 70 17)*

*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Statement

Novelty (N)	Claims	1-21	YES
	Claims		NO
Inventive step (IS)	Claims	1-21	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims		NO

2 Citations and explanations

This report makes reference to the following documents:

D01: US 5623336 A, published on 22 April 1997

D02: EP 1199549, published on 24 April 1002

D03: Data base PAJ in EPOQUNET, JP4122835, published on 23 April 1992

The invention relates to a device for analysing optical spectra by Brillouin scattering. The device comprises a narrow band optical source, an optical fibre section, an optical circulator, a second optical inlet, a detection system, a control and data acquisition system, an optical spacer and a polarisation controller; it may optionally contain an optical amplifier and one or more amplitude or polarisation modulators.

This device introduces a problem signal through an optical inlet into the optical fibre, at the end opposite to the probe signal inlet. Those signals propagate in opposite directions and when they interact in the optical fibre section, the probe signal and the problem signal generate an output signal which, once it is detected, can be analysed and supply data by means of a control system connected to the optical source.

Document D01, which is considered to represent the closest prior art, discloses a method and apparatus or device for analysing optical fibres using Brillouin spectroscopy. However, it uses a photodetector and a resonator, together with a thermostat. Although that document discusses how to characterise or analyse said fibres using spectral resolution, it uses a system that differs from the system according to the invention, both in form and in substance.

The applicant cites D02 as a prior art document. That document describes a device that uses the Brillouin scattering effect in an optical fibre and differs in that the problem and probe signal follow identical paths, rather than opposite paths with opposite directions of propagation, in order to obtain the Brillouin amplification effect.

Finally, document D03 is cited only as representative of the prior art in this field; it describes a spectroscopic method that uses the stimulated Brillouin phenomenon.

None of the documents cited in the international search report describes an analysis device as defined in the claims. The citations only describe the prior art and consequently the invention is novel, involves an inventive step and is industrially applicable.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (IPER)

SECTION 2: References cited and explanations (Rule 70.7)

Documents taken into account.

Document	Publication Number or Identification	Publication date
D01	US 5623336 A	22.04.1997
D02	EP 1199549	24.04.2002
D03	Data base PAJ of EPOQUNET, JP4122835	23.04.1992

The present invention refers to an optical signal spectrum-analyzing device by the Brillouin Scattering. This device consists of a narrowband optical source, an optical fiber link, an optical circulator, a second optical access, a detection system, a control and acquisition system, an optical isolator and a polarization controller; optionally can have an optical amplifier and one or some amplitude or polarization modulators.

This device introduces a test signal through an optical access into the optical fiber, on the opposite site of the entry of the probe signal. Both signals go or travel in opposite directions and when the probe signal and the test signal interact in the optical fiber link, they generate an output signal, which once is detected, it could be analyze and obtain some data by a control system connected to the optical source.

Document D01, which is considered as the most representative of the state of the art, it presents a method and a device for analyzing optical fibers using the Brillouin spectroscopy. For this purpose it consists of a photo detector and a resonator along with a thermostat. Although this document explains the method to characterize or analyze said optical fibers using the spectrum resolution, we observe that it uses a system that differs from the one here studied, both in appearance and background.

Document D02 is a document cited by the applicant as part of the state of the art. This document describes a device that uses the Brillouin Diffusion effect on an optical fiber.

This document differs in the fact that to obtain the Brillouin amplification effect, the test and probe signals have identical pathways, not opposite and with contrary spread way.

Document D03 is cited only as a representative way of the state of the art in this field; that describes a spectroscopy method that uses the Brillouin stimulated phenomenon.

None of the cited documents in the International Preliminary Examination Report describes an analyzing device as mentioned in the claims. Therefore, they are only documents that describe the state of the art and in consequence the invention is new and it is consider that involves inventive step and industrial application.